

Appln. No. 10/775,731
Amendment dated September 22, 2005
Reply to Office Action of June 23, 2005

Amendments to the Specification

Please amend paragraph [0025] as follows:

[0025] The ring oscillator 302 then produces a square wave signal, thereby internally supplying pumping signals for the rest of the generator. The swing of the square wave signal is within the allowable operating voltage range. The initial control module 304 initializes D/A converter 306 and combines the parallel data inputs 316 with the output clock signal of the ring oscillator 302 to produce clocked parallel data inputs to the D/A converter 306. D/A converter 306 can be initialized by a signal from the initial control module 304 forcing the weighted charge redistribution capacitors e.g. $C, 2C, \dots, 2^{n-1}C$ to ground while the reset signal in Figure 4A is also activated, thus discharging these capacitors also serves to improve precision. If the charge redistribution capacitors are binary weighted (as shown in Fig. 4A) code conversion module 308 is not needed and signal 316 is a binary weighted parallel digital input. If, however, the charge redistribution capacitors all have the same value, then The code converter 308 transforms a set of binary inputs to a set of thermometer signals input at 316, a set of finely-divided signals which are is then received by the initial control module 304. In response to the code converter 308 and the initial control module 304, the D/A converter 306 generates a pumping, analog equivalent of the square wave. It is understood that the initial control module 304 and the code converter 308 may be deemed as a part of the D/A converter 306 and they may be optional for the design too. This pumping signal may be reset by applying a reset signal to the D/A converter 306. The charge pump 310 then converts the pumping signal to a direct-current (DC) voltage. This DC voltage level is smoothed into a signal Vout by a load capacitor 312. Therefore, Vout is essentially a finely-divided range of reverse bias voltage applicable to the substrate of the transistor. The more finely-divided this reverse bias voltage is, the more voltage option there is

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available that is optimally close to the specific voltage necessary to produce the minimum leakage current Ioff.